Bharati

BIOLOGY
Practical

Note Book

Certificate

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(N.B. : The candidate is expected to retain his/her journal till he/she passes in the subject.)

- Name of Experiment :- Study of the reproductive parts of different flower.

- Procedure :- Following reproductive parts are present in flower

(a) Androcium:

(i) Androcium is male reproductive organ of flower
(ii) Stamens are many.
(iii) Staments are monoadelphous or diadelophous or polyadelphous.
(iv) free or Epipetalous

(b) Gynocium:

(i) Gynocium is the female reproductive organ of flower
(ii) Carpels are syncarpous or apocarpous.
(iii) Carpels are pentacarpellary or many
(iv) Each carpel consists of stigma, style, ovary
(v) Many ovules are present in ovary

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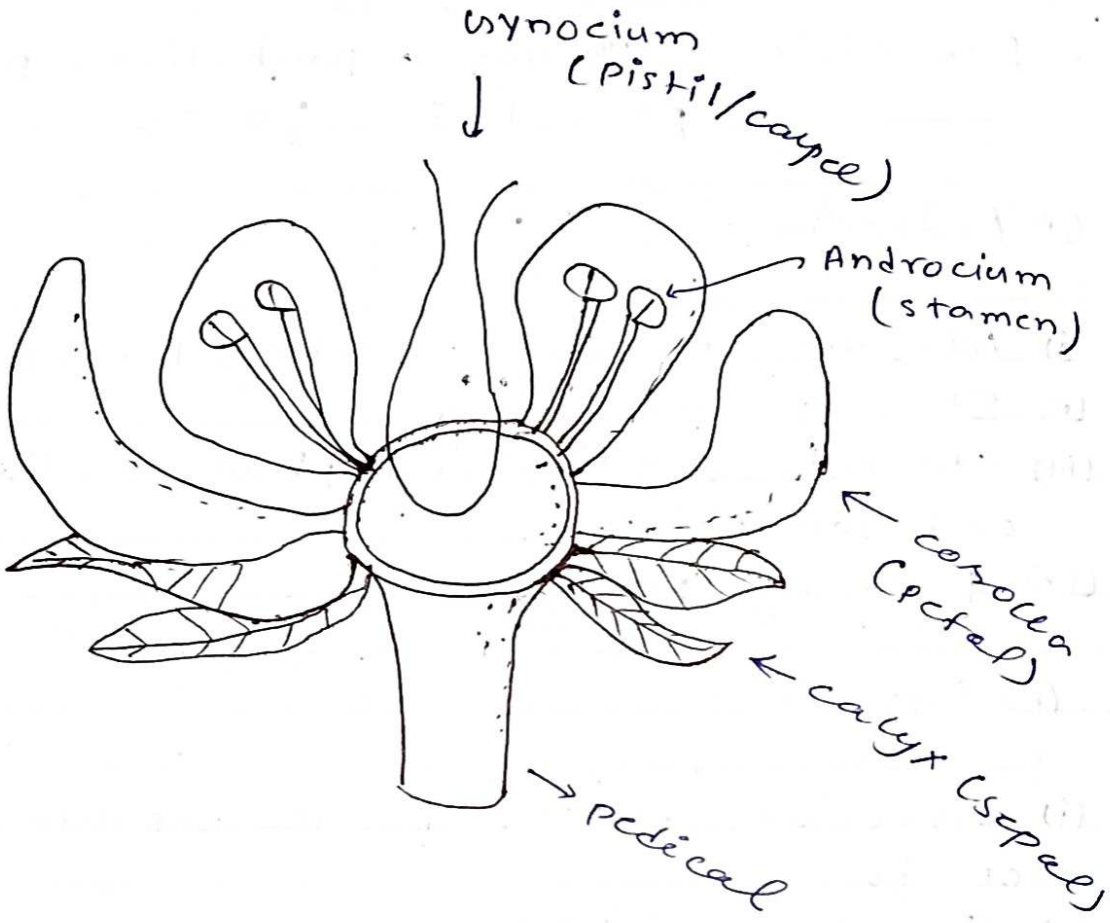

÷ Structure of a reproductive flower

- Name of the Experiment:
  ↳ Study of meiosis in onion bud cells (permanent slide)

- Required material:
  ↳ Microscope permant slide.

- procedure : Slide placed under microscope and studied under low and high power.

- Observation : Different stages of meiosis are as follows:

(i) Meiosis - I
prophase - I

(a) Leptotene:
(i) chromosomes became distinct as long thin filament called chromonemate.

(ii) Chromosomes look single

(iii) Nucleus enlarges.

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(iv) On each chromonemate are found clear beaded structure known as chromomers.

(b) Zygotene

(i) Pairing of homologous chromosomes take place and pairing is called synapsis.

(ii) The paired chromosomes called bivalents.

(iii) The centrioles separate from each other and migrate to opposite poles.

(iv) Nucleolus enlarges.

(c) Pachytene:

(i) Chromosomes became short and thick.

(ii) Tetravalent chromosome are seen.

(iii) Crossing over takes place.

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(d) Diplotene

(i) Bivalents repel each other and begin to separation is not complete. Here X like structure is clearly visible which is known as chiasmata

(ii) formation of Tetrad are clearly visible.

(e) Diakinesis

(i) Chromosomes shorten and thicken and migrates towards periphery of the nucleus.

(ii) Nuclear membrance and Nucleolus disappear.

(iii) formation of spindle fibre begins.

Metaphase I:

(i) chromosomes are arranged in equatorial region

(ii) Spindle fibre occupies the nuclear region.

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Anaphase I

(i) Two centromers of a pair of homologous chromosomes repel each other.

(ii) Migration of two chromosomes of each homologous pair to opposite pole take place.

Telophase I:

(i) Chromosomes at both poles become elongated and thread like.

(ii) Nuclear membrance is formed and nucleolus appears.

Cytokinesis:

↳ Telophase I is followed by the division of cytoplasm resulting in two cell each of haploid number of chromosomes.

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Meiosis II : It includes following stages:

Prophase II :

→ (i) Chromosomes are chromatids become very distinct.

(ii) Centroles migrate to opposite poles.

(iii) Spindle fibres are formed.

(iv) Nuclear membrane disappears.

(v) Nucleolas disappears.

Metaphase II :-

→ (i) Chromosomes move towards the equatorial plane

(ii) Spindle fibres occupy the place of nucleus.

↓

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Anaphase II

↳ (i) Each chromatid becomes a daughter chromosome due to division of centromere.

(ii) Each daughter chromosomes moves towards opposite poles.

- Telophase II:

↳ (i) chromosomes uncoiled and thin.

(ii) Nucleolus reappears.

(iii) Nuclear membrane is formed.

- Cytokinesis

↳ The cytoplasm of each cell divides and formation of 4 cells take place having haploid number of chromosomes.

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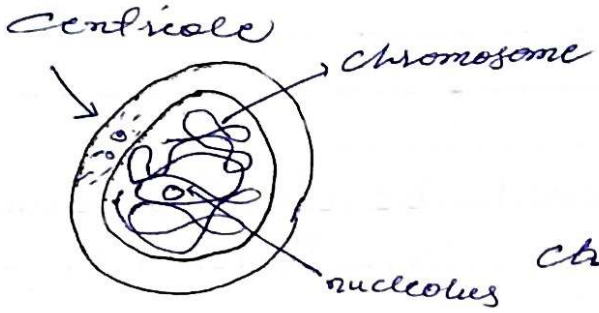
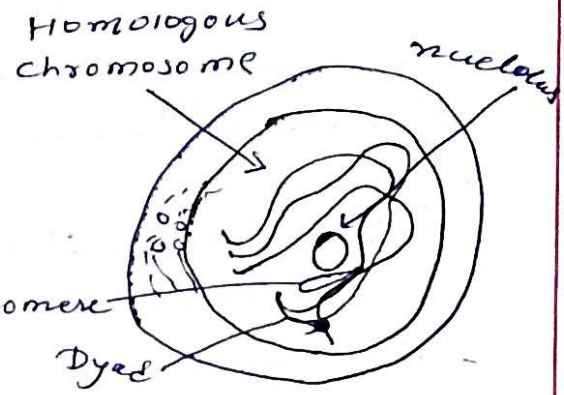
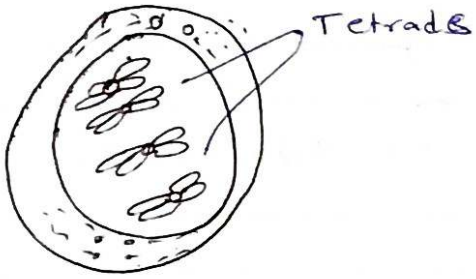


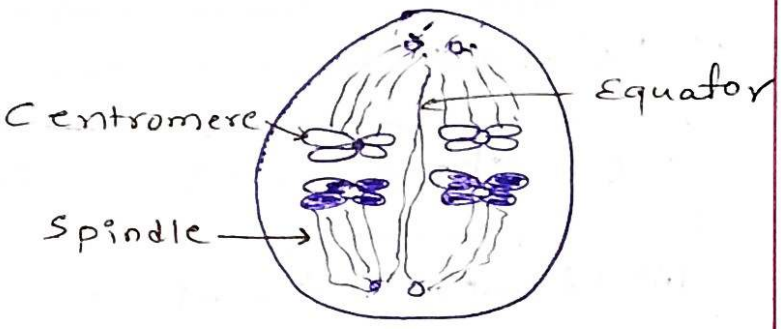
LEPTOTENE



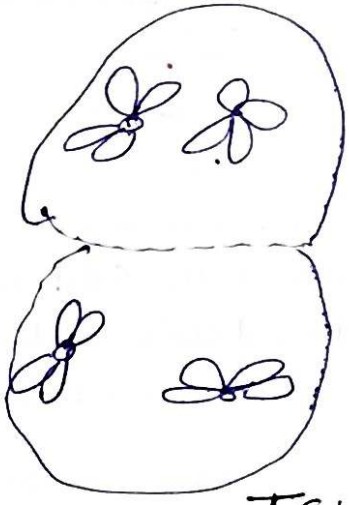
ZYGOTENE



DIAKINESIS



METAPHASE-I



TELOPHASE I

• Name of the Experiment: Study of fruits and seeds of any common fruit at different stages of development

• Mango fruit

⇒ (i) Mango fruit is covered by three layers : Epicarp, Mesocarp and Endocarp.

(ii) Epicarp is thin outermost layer.

(iii) Mesocarp is fleshy and edible part of fruit.

(iv) Endocarp is ~~right~~ rigit and hard.

(v) It is also called Drupe fruit

(vi) After fertilisation development takes place in ovary. Seed and endosperm formed by ovule.

In b/w ovary and ovule, cells are filled up.

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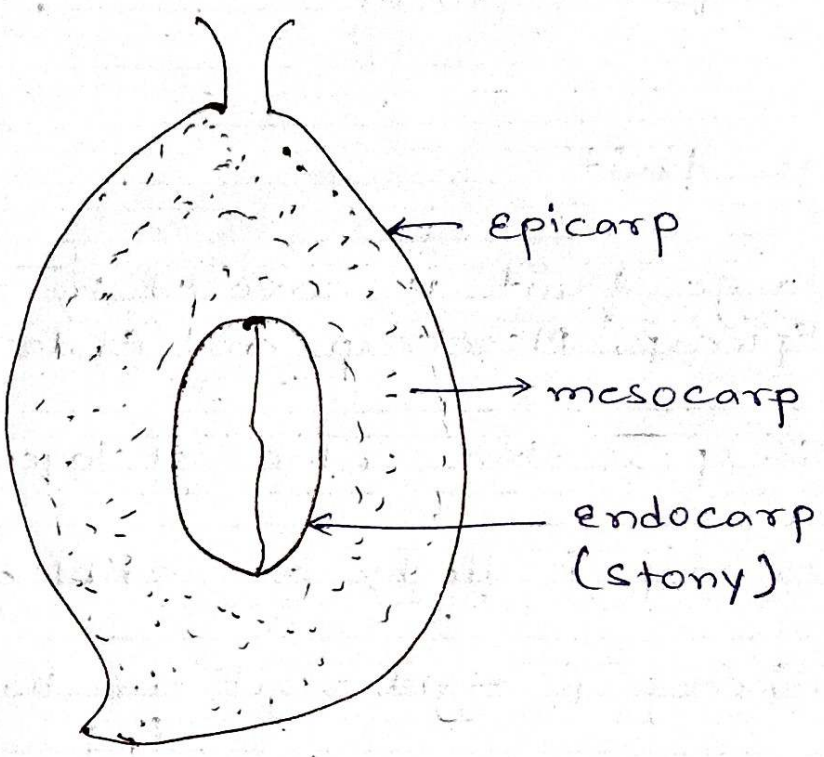

Fig: Structure of mango fruit

• Name of the Experiment :- Study of analogous Organ in plant.

Analogous organs have similar appearance and perform similar function but they are different in origin.
Example :- potato and sweet potato

• Comments :-

(i) potato is modified form of stem

(ii) Sweet potato is modified form of root.

(iii) Both are underground part of plant.

(iv) Eye is represent as microstructure in stem and called node.

(v) These are stone food.

(vi) Both have simal functional but different in origin.

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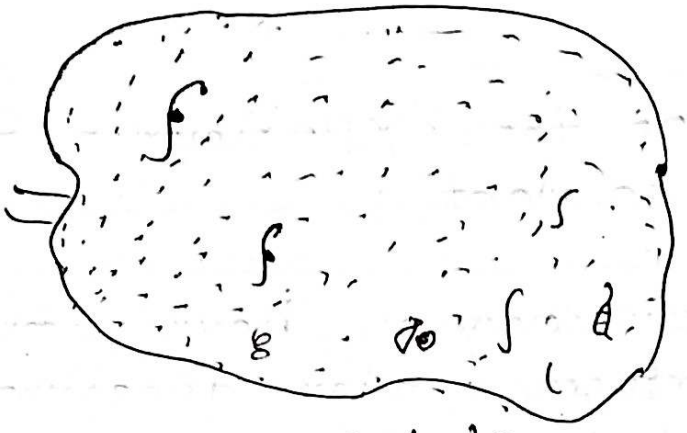
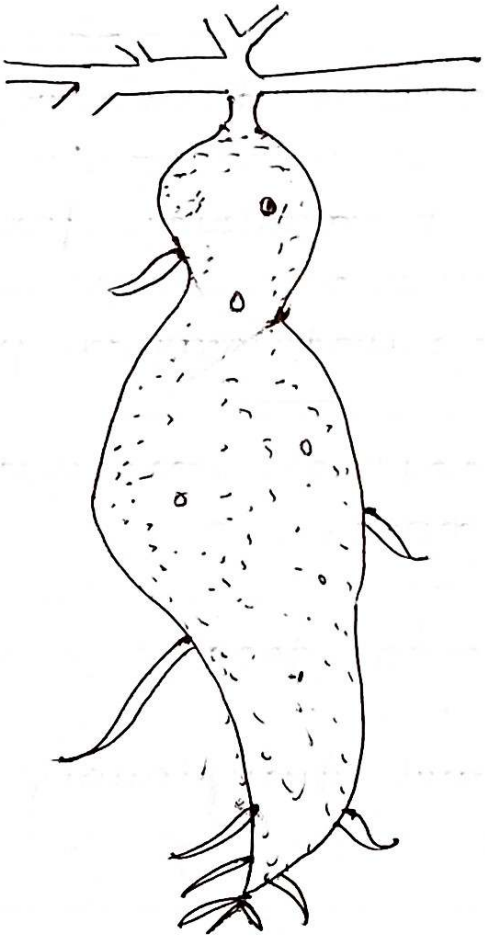


potato



Sweet potato

- Name of the Experiment :- Study of Homologous organ plant.

The homologous organs are similar or dissimar in structure and function but of similar in ~~are~~ origin.
example :- Tendril of pea and spines of Barberry

- Comment :

(i) Barberry spines are modified form of leaf.

(ii) Tendril is modified form of leaf.

(iii) Tendril provides mechanical support and Barberry spines provide protection.

(iv) Both are originated from same places. So these are homologous organs.

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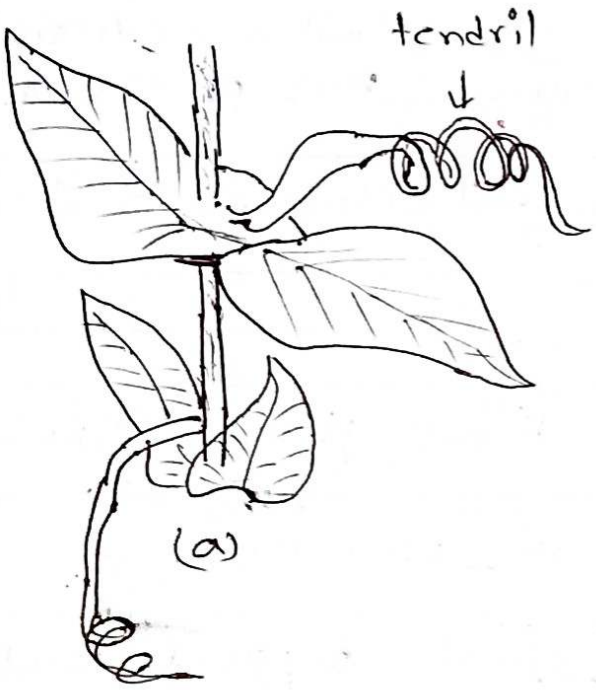

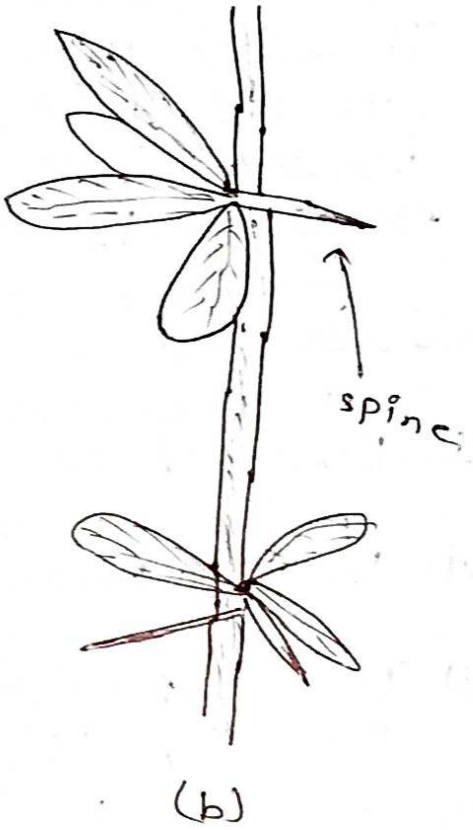

(a) → Leaf tendril of pea

(b) → Leaf spine in barberry

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- Name of the experiment: Study and identify stages of gamete development in T.S of Mammalian ovary

- Comments:

(i) Ovary is round or oval shaped structure.

(ii) It is covered by peritoneum consisting of cubical cells forming germinal epithelium.

(iii) The ovary is attached at the helus by meso-varium with the uterus.

(iv) The geminal epithelium is bounded by connective tissue called as tunica albugina.

(v) Several primary oocytes are seen beneath germinal epithelium. Mature follicle is called Graffian follicle.

(vi) T.s passing through ovary or graffian follicle shows following important structures.

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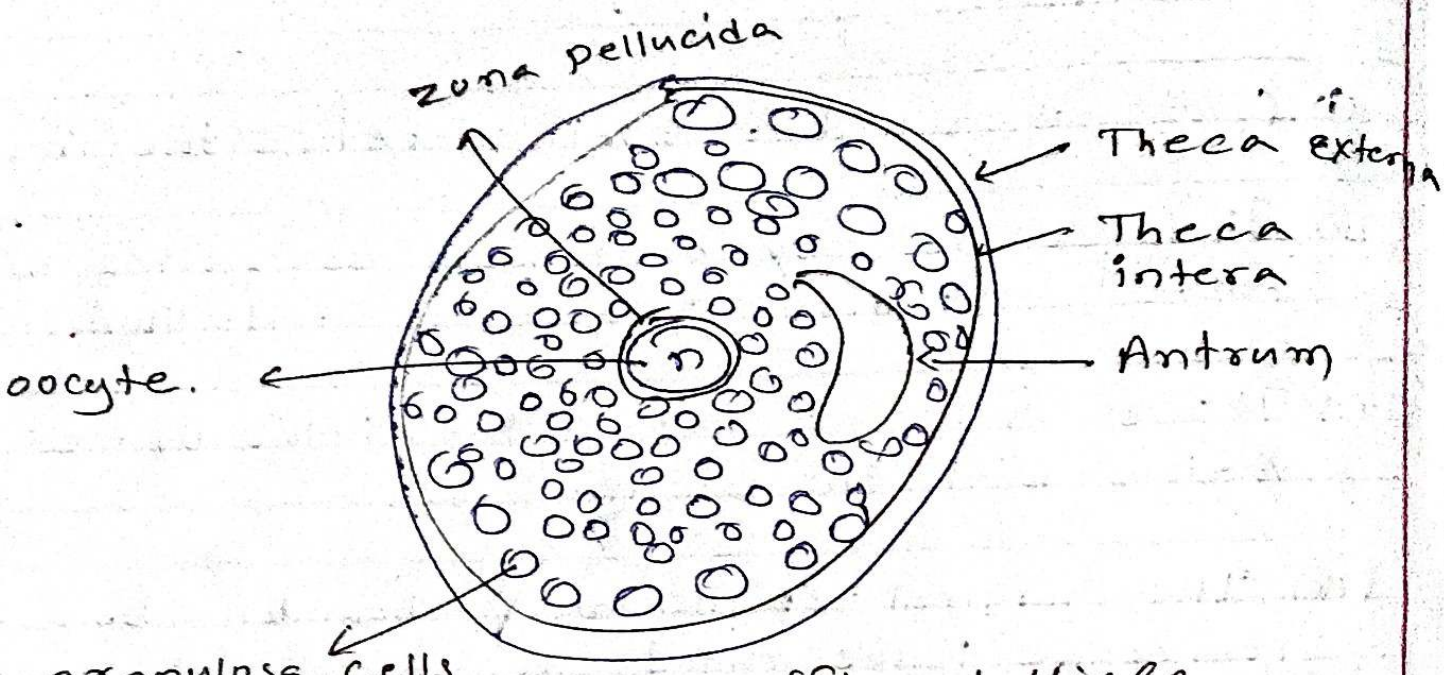
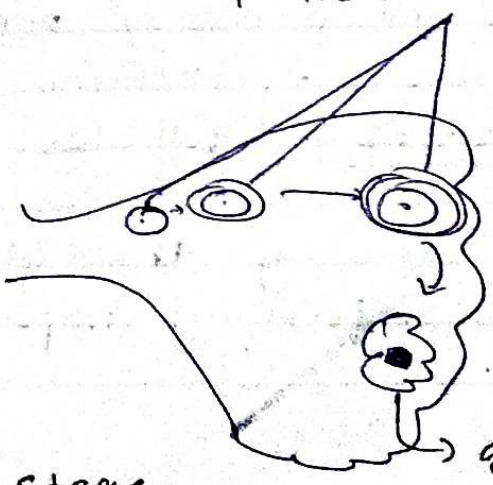


(a) graffian follicle

Follicle development



follicle stage (b)

graffiane follicle

(a) Each graffian follicle is made up of a wall known as theca folliculle consisting of ovum and epithelium.

(b) In the smallest follicle ovum is single layered.

(c) The cells living the cavity of the follicle are termed membrane granulosa, while the mass of cells surrounding immediately ovum are called discuss prodigerous.

(d) The fully nature oocyte is surrounded by zona pellucida.

(e) Zona pellucida contains yolk and fat droplets.

(f) A yellowish mass is left after enthusian of ova known as carpus leteum which produces a hormone progestron.

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- Name of the Experiment: Study of pollen tube growth on stigma.
- Required materials: flower, Needle, Safranin, Glycerine, Coverslip, Slide microscope.
- procedure:

(i) A carpel is taken from flower and stained.

(ii) pollen tubes are stained and counted.

- Observation:

(i) A pollen tube is entered into style and arrived near the ovary wall.

(ii) Nucleus and germinative cell is present in pollen tube.

- precaution:- (i) preserve the stigma of carpel properly

(ii) Bubbles should be absent during staining.

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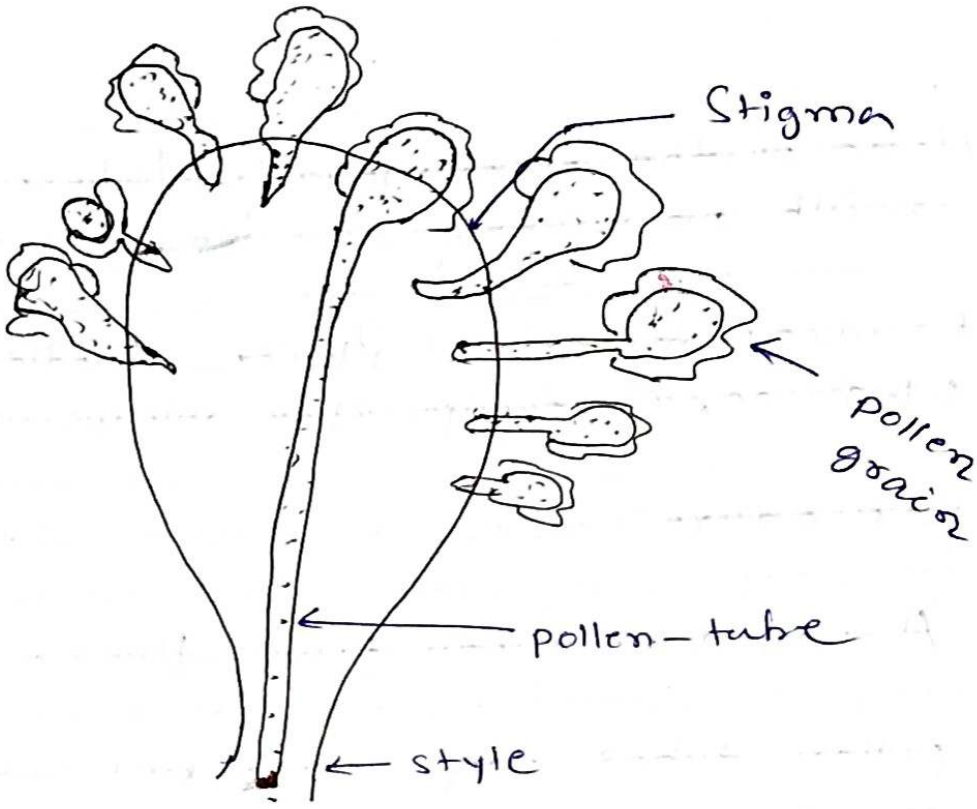

fig:- Pollen germination in a pollinated pistil of flower

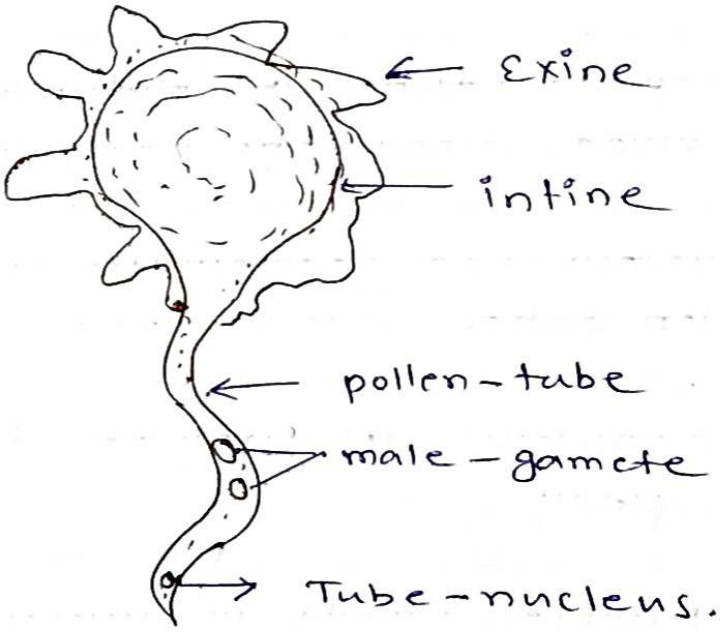

fig:- Germinating pollen under compound microscope

- Name of Experiment: Study of pedigree charts for genetic traits.

- Theory

↳ Inheritance of certain traits for two or more generations present in the form of a diagram or family tree is called pedigree. It is employed in case of human beings. In human beings the generation time is long, 24 year or more.

In pedigree analysis several genetic traits can be studies.

- process

(i) In a pedigree a square represent the male.

(ii) A circle ○ is the female.

(iii) Solid symbol shows the trait under study.

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(iv) A cross or shade in the symbol signifies the carrier of a recessive allele.

(v) Parents are shown by horizontal line while their offspring are connected to it by a vertical line.

(vi) The offsprings are also shown in the form of a horizontal line below the parents and numbered with arabic numerals.

(vii) Each generation is given a women numeral and a separate row.

(viii) pedigree analysis is study of pedigree for the transmission of particular trait and finding the possibility of having children with genetic defects like colourblindness, rolling of fingers, blood graphs and widows peak haemophilia etc.

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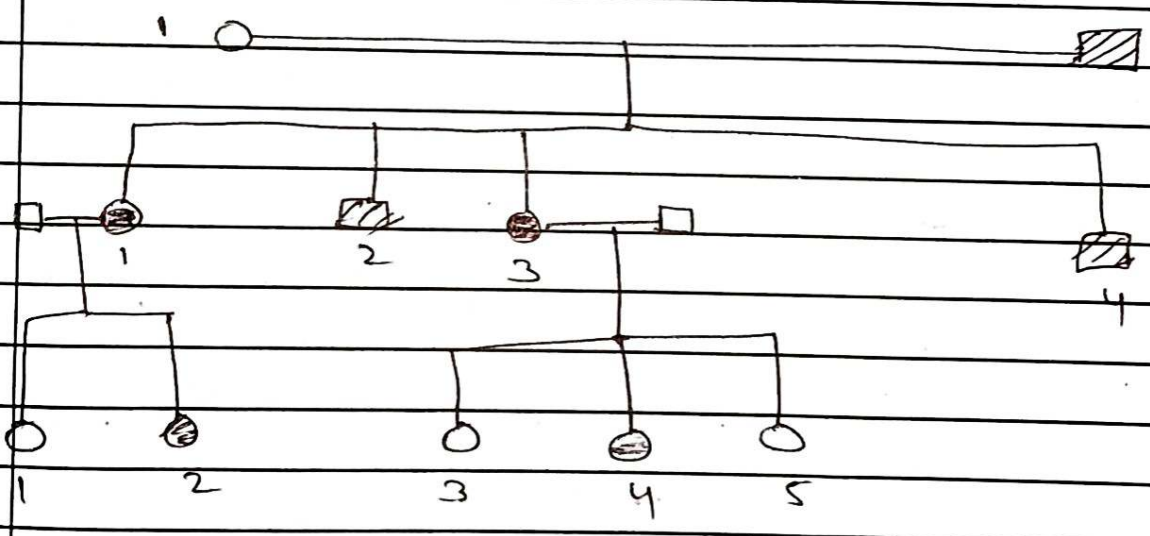
(ix) Pedigree analysis employs two tools :-

→ (a) principle of probability and chances of difference in realised ratio due to smallness of progeny.

(b) Elimination of alternative.

Example : A pedigree given below indicate whether the shaded symbols belong to dominant or recessive allele. Also give genetype of the whole pedigree.



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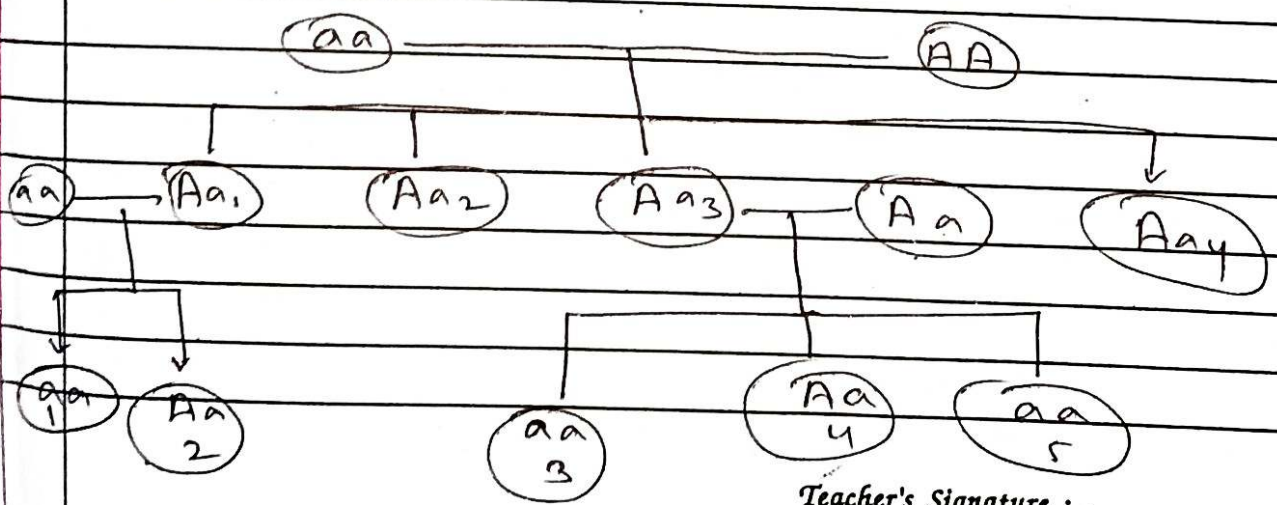
(i) Since the shaded symbol appears in all the ~~way~~ offspring, father must be homologous dominant while the mothe homozygous - recessive (AA X a = mAa) because in all other cases. This possibility is absent.

(ii) All the member of II generation will therefore be heterozygous (Aa).
Thus further is confirmed by marriage of II-1 with homogygous recessive (Aa X aa = 2 Aa, 2 aa) and bearing children of both the parental types marriage of II-3 with the homozygous recessive can produce both - recessive and heterozygous as are present here.



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Result :-

(i) Cause of colour blindness is X-chromosome, so male is not carrier.

(ii) Colour blindness related to male and female.

(iii) female is carrier of colourblind gene.

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- Name of the experiment :- To study about Xerophytic plant.

- Materials required :- Sample of exophytic plant

- Throry :- Xerophytic plant found in 'Xeric condition' where loss of water take place and transpiration is very fastly. Loss of water, two important reasons are -

(i) Real loss of water in soil.

(ii) Loss of water from functional aspect xerophytic plant generally grow in desert area.

e.g. Cactus, Opuntia, etc.

- procedure :- Morphologically studied the specimen and diagrammatically represent.

↓

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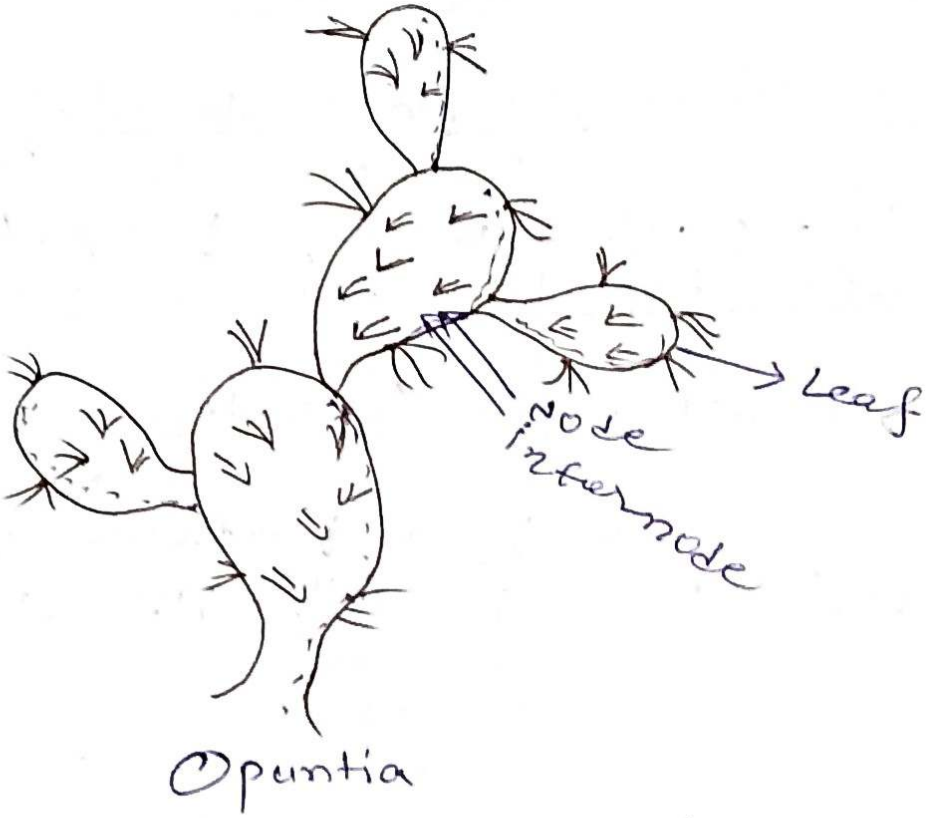
Leaf
Node
Internode
Opuntia

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- Observation:

Cactus: (i) Leaf modify into spines.
(ii) Stem is fleshy and store water
(iii) Mechanical tissues are well - developed.

Opuntia: (i) Leaf modify into spine
(ii) Stem is small, flat, green and fleshy
- It store minerals, water and - photosynthesize.
(iii) Root is deeped, it can absorb more water.

- precautions:

(i) Specimen should be fresh

(ii) Carefully studied

(iii) Drawing of diagram should be necessary

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• Name of experiment :- To identify common disease causing organism Ascaris.

(1) Male Ascaris.

(i) It is commonly known as roundworm and causes Ascariasis.

(ii) Body is thin and pointed at both ends.

(iii) The anterior terminal mouth is bounded by three lips.

(iv) A pair of chitinars ~~as~~ needle-like structure called penial set comes out from an opening which serves also as a reproductive aperture in male.

(v) four longitudinal lines are present of these one is dorsal, one is venteral and two are lateral in position & are caller lateral lines.

↓

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(2) female ascaris

(i) Mouth is present on anterior end

(ii) Body is thin and thread like

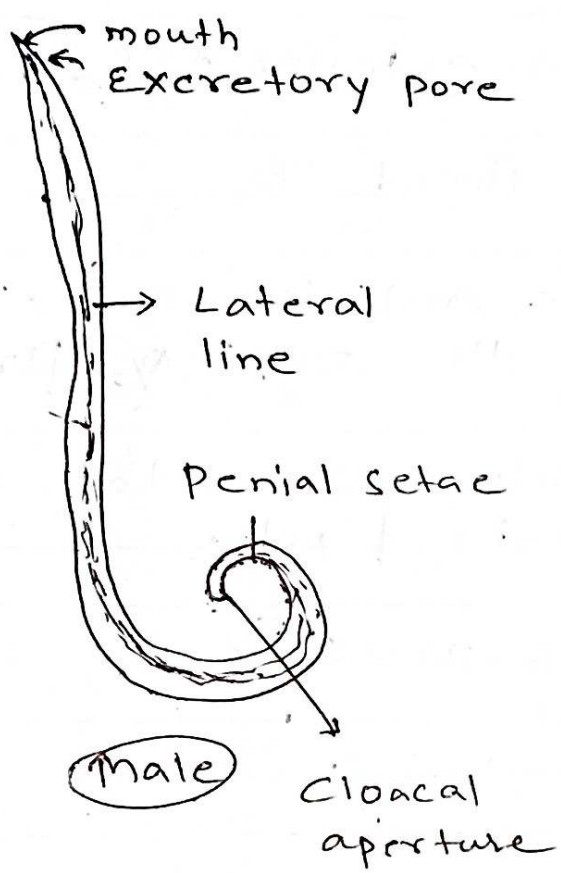
(iii) A little behind the anterior end on the ventral surface is the excetory flore.

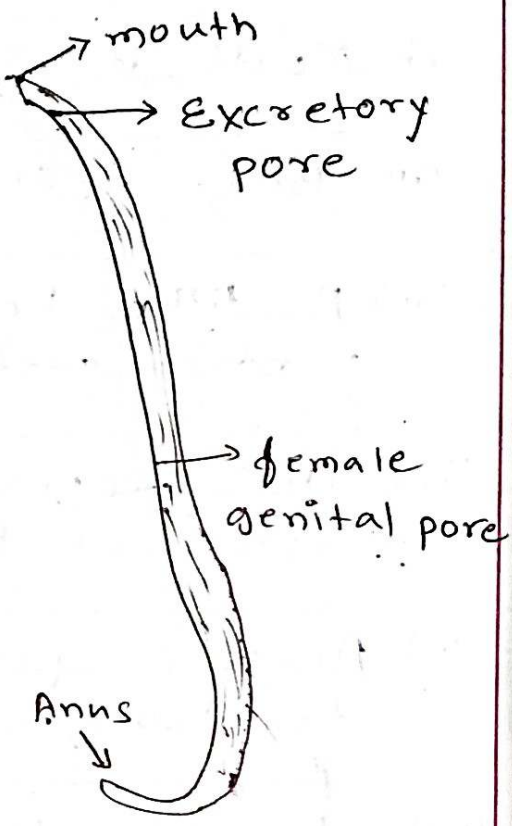
(iv) The genopere is situated on the neutral surface of the body in female.

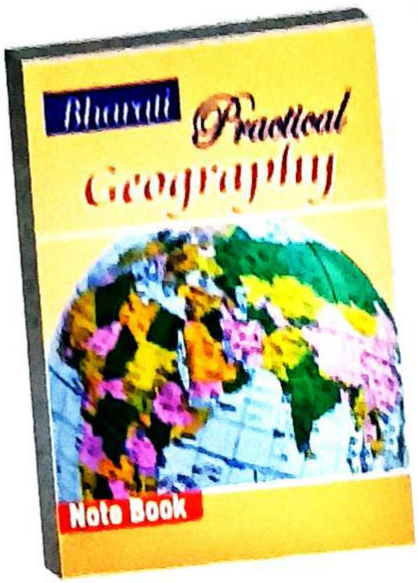
(v) Anuss is present at posterior region of the body.

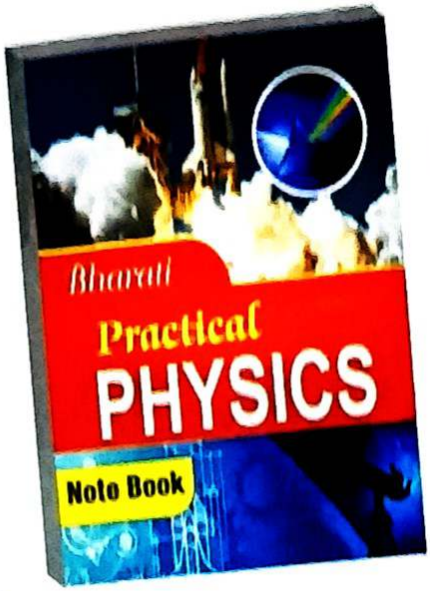
(vi) It cause Ascaris.

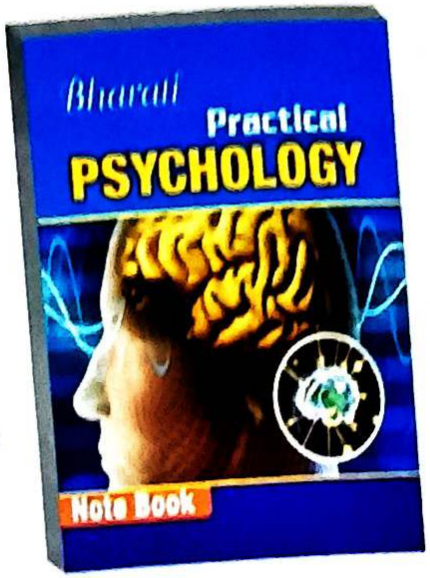
Symptoms ÷ They may cause colic pains with diarrhea vomiting and slight temperature

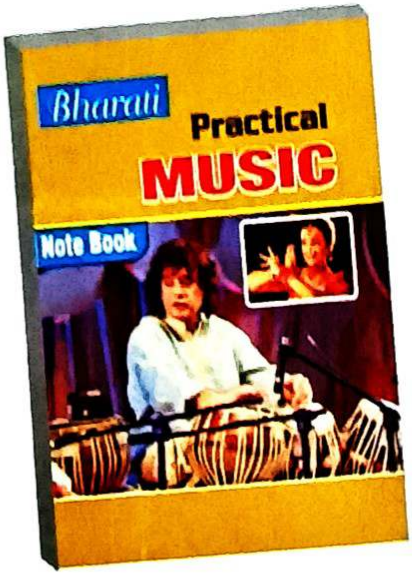

mouth
Excretory pore
Lateral line
Penial setae
Cloacal aperture
Male

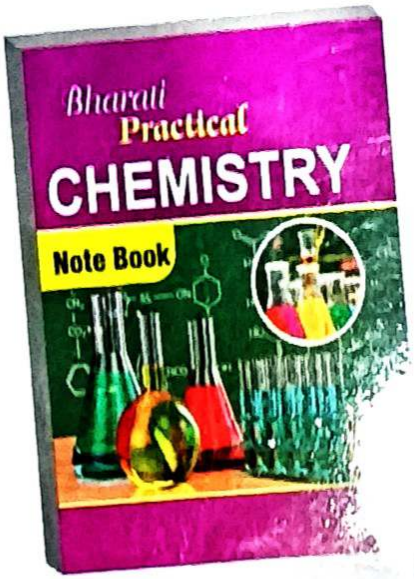

mouth
Excretory pore
female genital pore
Anus
Female

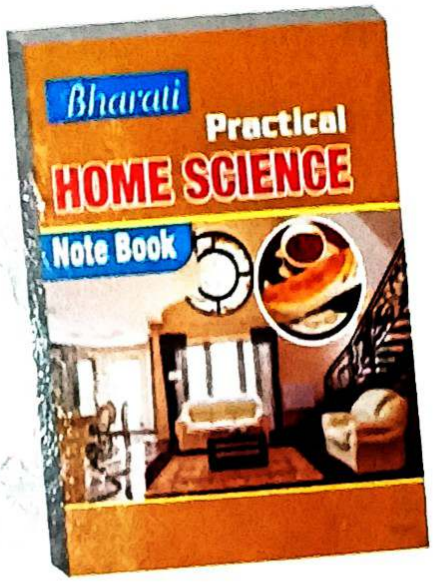












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